Pipette rinse basins 1942, 1944 are attached to the side of the housing 904. Each rinse basin 1942, 1944 provides an enclosure structure with a probe-receiving opening 1941, 1945, respectively, formed in a top panel thereof and a waste drain tube 1946, 1948, respectively, connected to a bottom portion thereof. A probe of a pipette unit can be inserted into the rinse basin 1942, 1944 through the probe-receiving opening 1941, 1945, and a wash and/or rinse fluid can be passed through the probe and into the basin. Fluid in the rinse basin 1942, 1944 is conducted by the respective waste drain tube 1946, 1948 to the appropriate waste fluid container in the lower chassis 1100. In the preferred arrangement and mode of operation of the analyzer 50, probe 481 of pipette unit 480 is rinsed in rinse basin 1942, and probe 483 of pipette unit 482 is rinsed in rinse basin 1944.

After the amplification reagent and oil are added to the receptacle vessels 162 of MTU 160 in the left orbital mixer 552, the left-side transport mechanism 502 retrieves the MTU 160 from the left orbital mixer 552 and moves the MTU 160 to an available temperature ramp-up station 700 that is accessible to the left-side transport mechanism 502, i.e. on the left side of the chemistry deck 200, to increase the temperature of the MTU 160 and its contents to about 60°C.

After sufficient ramp-up time in the ramp-up station 700, the left-side transport mechanism 502 then moves the MTU 160 to the target capture and annealing incubator 600. The left-side distributor door 624 of the target capture and annealing incubator 600 opens, and the MTU carousel assembly 671 within the incubator 600 presents an empty MTU station 676 to permit the left-side transport mechanism to insert the MTU into the incubator 600. The MTU 160 and its contents are then incubated at about 60°C for a prescribed incubation period. During incubation, the MTU carousel assembly 671 may continually rotate within the incubator 600 as other MTUs 600 are removed from and inserted into the incubator 600.

Incubating at 60°C in the annealing incubator 600 permits dissociation of the capture probe/target nucleic acid hybridization complex from the immobilized polynucleotide present in the assay solution. At this temperature, oligonucleotide primers introduced from the reagent cooling bay 900 can hybridize to the target nucleic acid and subsequently facilitate amplification of the target nucleotide base sequence.

Following incubation, the MTU carousel assembly 671 within incubator 600 rotates the MTU 160 to the left-side distributor door 624, the left side distributor door 624 opens, and the left-side transport mechanism 502 retrieves the MTU 160 from the MTU carousel assembly 671 of the target capture and annealing incubator 600. The left-side transport mechanism 502 then

moves the MTU 160 to, and inserts the MTU 160 into, an available temperature ramp-down station 700 that is accessible to the left-side transport mechanism 502. The temperature of the MTU 160 and its contents is decreased to about 40°C in the ramp-down station. The MTU 160 is then retrieved from the ramp-down station by the left-side transport mechanism 502 and is moved to the active temperature and pre-read cool-down incubator 602. The left-side distributor door 624 of the AT incubator 602 opens, and the MTU carousel assembly 671 within incubator 602 presents an empty MTU station 676, so that the left-side transport mechanism 502 can insert the MTU into the incubator 602. Within the active temperature and pre-read cool-down incubator 602, the MTU is incubated at about 41°C for a period of time necessary to stabilize the temperature of the MTU.

From the active temperature and pre-read cool-down incubator 602, the MTU is moved by transport mechanism 502 to the amplification incubator 604 in which the temperature of the MTU is stabilized at 41.5°C. The MTU carousel assembly 671 within the amplification incubator 604 rotates to place the MTU at the pipetting station below the pipette openings 662 formed in the cover 611 (see, e.g., FIGURE 19). The container tray 922 within the reagent cooling bay 900 rotates to place the enzyme reagent container below a pipette opening 908, and pipette unit 482 of pipette assembly 470 transfers enzyme reagent from the reagent cooling bay 900 to each of the receptacle vessels 162 of the MTU 160.

As explained above, pipette units 480, 482 use capacitive level sensing to ascertain fluid level within a container and submerge only a small portion of the end of the probe 481, 483 of the pipette unit 480, 482 to pipette fluid from the container. Pipette units 480, 482 preferably descend as fluid is drawn into the respective probe 481, 483 to keep the end of the probe submerged to a constant depth. After pipetting reagent into the pipette unit 480 or 482, the pipette unit creates a minimum travel air gap of 10 $\mu$l in the end of the respective probe 481 or 483 to ensure no drips fall from the end of the probe.

After enzyme reagent is added to each receptacle vessel 162, the MTU carousel assembly 671 of amplification incubator 604 rotates MTU 160 to the skewed disk linear mixer 634 within amplification incubator 604 and the MTU 160 and its contents are mixed as described above at about 10 Hz to facilitate exposure of the target nucleic acid to the added enzyme reagent. The pipette unit 482 is moved to rinse basin 1942, and the probe 483 is rinsed by passing distilled water through it.

The MTU 160 is then incubated within amplification incubator 604 at about 41.5°C for a prescribed incubation period. The incubation period should be sufficiently long to permit adequate amplification of at least one target nucleotide base sequence contained in one or more target nucleic acids which may be present in the receptacle tubes 162. Although the preferred embodiment is designed to facilitate amplification using a transcription-mediated amplification (TMA) procedure, which is discussed in the background section *supra*, practitioners will easily appreciate those modifications necessary to perform other amplification procedures using the analyzer 50. In addition, an internal control sequence is preferably added at the beginning of the assay to provide confirmation that the amplification conditions and reagents were appropriate for amplification. Internal controls are well known in the art and require no further discussion here.

Following amplification incubation, the MTU 160 is moved by the left-side transport mechanism 502 from the amplification incubator 604 to an available ramp-up station 700 that is accessible to the left-side transport mechanism 502 to bring the temperature of the MTU 160 and its contents to about 60°C. The MTU 160 is then moved by the left-side transport mechanism 502 into the hybridization incubator 606. The MTU 160 is rotated to a pipetting station in the hybridization incubator 606, and a probe reagent from the reagent cooling bay 900 is pipetted into each receptacle vessel, through openings 662 in the cover 611 of the hybridization incubator 606, by the pipette unit 480. The probe reagent includes chemiluminescent detection probes, and preferably acridinium ester (AE)-labeled probes which can be detected using a hybridization protection assay (HPA). Acridinium ester-labeled probes and the HPA assay are well known in the art and are described more fully in the background section *supra*. While AE-labeled probes and the HPA assay are preferred, the analyzer 50 can be conveniently adapted to accommodate a variety of detection methods and associated probes, both labeled and unlabeled. Confirmation that detection probe has been added to the receptacle vessels 162 can be accomplished using an internal control that is able (or its amplicon is able) to hybridize to a probe in the probe reagent, other than the detection probe, under the HPA assay conditions extant in the receptacle vessels 162 in the hybridization incubator 606. The label of this probe must be distinguishable from the label of the detection probe.

After dispensing probe reagent into each of the receptacle vessels 162 of the MTU 160, the pipette unit 480 moves to the pipette rinse basin 1944, and the probe 481 of the pipette unit is rinsed with distilled water.